Abstract of the Disclosure

A PON slave controller for use in a PON ONU system capable of processing in unit of byte outputs an enable signal to external for a mini-slot payload and receives a byte input signal for enabling usage of an arbitrary MAC (Medium Access Control) technique loading arbitrary data in a mini-slot. An ATM-PON ONU controlling apparatus of the present invention includes a cell receiving unit for transferring an ATM cell through a receiving UTOPIA interfacing unit to external and transferring a message in a PLOAM cell, a cell transmitting unit for loading the ATM cell received through a transmitting UTOPIA interfacing unit in a granted slot and transferring in upstream and downstream by loading the message being on standby in payload of the PLOAM cell when the PLAOM cell is transmitted, and a message processing unit for setting internal signals by processing the received message or instructing operation of a plurality of functional blocks, and transferring the message requested by the plurality of functional blocks through the cell transmitting unit.